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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,248	02/25/2004	Michael N. Perugini	02021-072002	2716
26161	7590	10/05/2004	EXAMINER ZARROLI, MICHAEL C	
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110			ART UNIT 2839	PAPER NUMBER

DATE MAILED: 10/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/786,248	Applicant(s) PERUGINI ET AL.	
	Examiner Michael C. Zarroli	Art Unit 2839	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 59-89 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 59-89 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/12/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the cavities formed **between** the upper and lower surfaces and open to the air must be shown on the feature(s) canceled from the claim(s). Also, the air filled **glass sphere** within a cavity must be shown. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR

1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

3. Claims 59-73, 75 and, 80-89 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 59 and 80 each seem to recite two different contacts? There are contacts in the substrate (e.g. line 5 claim 59) that receive different contacts (e.g. preamble claim 59)? The examiner will interpret as such. Also, in these claims there is an antecedent problem with “each signal contact.”

Claim 65 contains the trademark/trade name Teflon. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the

requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe the material of an insert and, accordingly, the identification/description is indefinite.

In claim 75 **the** cavity is recited as being filled with air. Yet in the claim from which 75 depends **a** cavity is recited as being filled with a non-conductive material. How can the same cavity be filled with air and a non-conductive material? Is the air the non-conductive material? The examiner will interpret the cavity in claim 75 to be a different cavity than the one recited in claim 74.

Claim 80 recites the limitation "the circuit card" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 59-61, 66 and, 68-69 (as best understood) rejected under 35 U.S.C. 102(b) as being anticipated by Sumida et al.

Sumida discloses an intercoupling component (10) for receiving an array of contacts (not shown) comprising: a substrate (11) formed of a non-conductive material (paragraph 00065 line 2) and having an upper surface (fig. 1), the substrate including a plurality of holes (11g) disposed on its upper surface and arranged in a predetermined footprint (e.g. fig. 1 or fig. 24) corresponding to the array of contacts; and a plurality of contacts (15, 21), each signal contact disposed at least partially within a hole on the substrate (fig. 1 or 3), the substrate including

a plurality of cavities (11b), each of the cavities disposed between adjacent contacts.

Regarding claim 60 Sumida discloses that the cavities are formed on the upper surface of the substrate and are open to air (fig. 1).

Regarding claim 61 Sumida discloses that the cavities are formed between the upper surface and a lower surface of the substrate and are open to air (figures 2A & 2B).

Regarding claim 66 Sumida discloses that at least some of the plurality of contacts are adapted to transmit single-ended signals (paragraph 0065 lines 4-6).

Regarding claims 68-69 Sumida discloses that the plurality of contacts comprises: two or more pair of contacts (contacts 15 & 21), each pair of contacts adapted to transmit differential signals and, some of the cavities (figures 1, 3, 9 etc.) are formed between each pair of contacts adapted to transmit differential signals.

6. Claims 74 and, 76-77 rejected under 35 U.S.C. 102(e) as being clearly anticipated by Sievenpiper et al.

Sievenpiper discloses an intercoupling component (title) comprising: a substrate (11) formed of non-conductive material having a first dielectric constant (paragraph 0025 lines 4+), the substrate having an upper surface (fig. 3b) and

including a first hole (12) and a second hole (12) disposed on its upper surface; a first conductor (paragraph 0029 lines 5-7) disposed at least partially within the first hole; and a second conductor disposed at least partially within the second hole (paragraph 0029 lines 5-7 & fig. 5d), the substrate including a cavity (figures 3a & 5e) disposed between the first and second conductor, wherein the cavity is filled with non-conductive material (21) having a second dielectric constant.

Regarding claim 76 Sievenpiper discloses that the cavity is disposed on the upper surface of the substrate (fig. 3a).

Regarding claim 77 Sievenpiper discloses that the cavity is disposed between the upper surface and a lower surface of the substrate (figures 3a or 5d & 5e).

7. Claims 80-82 and, 85 (as best understood) rejected under 35 U.S.C. 102(e) as being anticipated by Johnson et al.

Johnson discloses an apparatus for use in a digital or analog transmission system (Field of Invention section), a circuit card comprising: a printed circuit board (116); and an interconnection device coupled to the printed circuit board (figures 3 & 5), the interconnection device comprising: a substrate (22) formed of a non-conductive material and having an upper surface (40), the substrate including a plurality of holes (fig. 4 at 38) disposed on its upper surface and arranged in a

predetermined footprint (fig. 2) corresponding to an array of contacts; and a plurality of contacts (e.g. 28), each signal contact disposed at least partially within a hole on the substrate (fig. 3), the substrate including a plurality of cavities (38), each of the cavities disposed between adjacent contacts (figures 2, 4, 13 & 15).

Regarding claim 81 Johnson discloses that the cavities are formed on the upper surface of the substrate and are open to air (e.g. fig. 15).

Regarding claim 82 Johnson discloses that the cavities extend between the top and bottom of the substrate (fig. 15 at 100).

Regarding claim 85 Johnson discloses that at least some of the plurality of contacts are adapted to transmit single-ended signals (col. 2 lines 21-22).

Claim Rejections - 35 USC § 103

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35

U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35

U.S.C. 103(a).

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 62-63 (as best understood) rejected under 35 U.S.C. 103(a) as being unpatentable over Sumida et al as applied to claim 59 above, and further in view of Sievenpiper et al.

Sumida does not disclose that a dielectric material with a lower dielectric constant is disposed within the cavity.

Sievenpiper discloses a second dielectric material (21) with a lower dielectric constant (paragraph 0035 lines 7+) than the substrate is disposed within the cavity (fig. 5e).

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify Sumida by adding a second dielectric constant material to the cavity of Sumida as taught by Sievenpiper. The motivation for this change would be to control stray capacitances in the circuit board of Sumida.

11. Claim 67 (as best understood) rejected under 35 U.S.C. 103(a) as being unpatentable over Sumida et al.

Sumida does not specifically disclose contacts connected to reference ground.

However, in the specification paragraph 0065 lines 4-6, Sumida indicates that the contacts can be connected per circuit design.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to modify the circuit of Sumida to have contacts connected to a reference ground. The motivation for this arrangement would be to provide noise reduction for the signals when in proximity to the bus voltage.

12. Claims 78-79 rejected under 35 U.S.C. 103(a) as being unpatentable over Sievenpiper et al as applied to claim 74.

Sievenpiper does not specifically disclose the strength of the first and second dielectric constants.

At the time the invention was made it would have been obvious to one of ordinary skill in the art to adjust the dielectric constant strength of the first and second dielectrics to be higher or lower than the other depending on the application. The motivation for the adjustment could be to control stray capacitances or to control signal strength in the event of bending. It has been held in court that selection of a

known material for a known purpose is well known and obvious in the art; In re Leshin, 125 USPQ 416 (CCPA 1960).

Allowable Subject Matter

13. Claims 64, 70-73, 83-84 and, 86-89 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter: Most of the claims in the preceding paragraph recite only one limitation obviously then that is the limitation that is allowable when combined with the claims from which it depends.

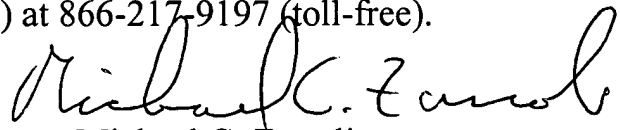
Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Briust et al, Turner et al, Vicich et al, Olson and, Nakajima all teach contacts in holes of a substrate with cavities between the contact holes.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael C. Zarroli whose telephone number is 571-272-2101. The examiner can normally be reached on 7:30 to 3:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, T.C. Patel can be reached on (571) 272-2800 ext 39. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Michael C. Zarroli
Primary Examiner
Art Unit 2839

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